PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION

Title

Global cropland gross primary productivity

Initial Coordinators and Proposing Group

Tiexi Chen[1], Guido van der Werf[1], Nadine Gobron[2], A.J. (Han) Dolman[1]

1,Faculty of Earth and Life Sciences, Vrije Universiteit Amsterdam, De Boelelaan 1085, 1081 HV Amsterdam, The Netherlands

2, Climate Risk Management Unit, Institute for Environment and Sustainability, European Commission Joint Research Center, Ispra, Italy

Short Outline

Global terrestrial GPP and NPP estimates are still uncertain, especially in croplands that previous studies showed significant disagreements [*Beer et al.*, 2010]. Croplands cover an area of around 15 million km^2 all over the world and have special characteristics compared with natural ecosystems. To better constrain GPP and NPP in croplands, we modified the Carnegie-Ames-Standford-Aprroach (CASA) biogeochemical model to generate 0.05° global cropland monthly GPP and NPP for the year of 2000. The CASA model is based on the light use efficiency (LUE) approach.

Within our model, the light use efficiency parameter (ε*) need to be re-estimated. Our previous study [*Chen et al.*, 2011] showed that ε* varies with crop plant type and need to be carefully constrained. We hope to further constrain ε* directly by combining flux data from the La Thuile data set with our new model set-up.

Proposed Sites to Be Involved

All croplands sites

Rules Applied For Use of Site Data and Co-authorship Strategy

La Thuile FLUXNET data policy will be applied.

Reference

Beer, C., et al. (2010), Terrestrial Gross Carbon Dioxide Uptake: Global Distribution and Covariation with Climate, *Science*, *329*(5993), 834-838.

Chen, T. X., G. R. van der Werf, A. J. Dolman, and M. Groenendijk (2011), Evaluation of cropland maximum light use efficiency using eddy flux measurements in North America and Europe, *Geophys Res Lett*, *38*.